

SEQUENCE LISTING

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 Tsunoda, Hiroyuki
 Igawa, Tomoyuki
 Sekimori, Yasuo
 Tsuchiya, Masayuki

<120> IgM PRODUCTION BY TRANSFORMED CELL AND
 METHOD OF QUANTIFYING THE SAME

<130> 14875-155US1

<150> PCT/JP2004/010444
 <151> 2004-07-15

<150> US 60/487,333
 <151> 2003-07-15

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<170> PatentIn version 3.1

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Pro Gly Gly Cys Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe		
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Ser Ser Cys Ala Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu		
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gag tgg gtc tca gct att agt ggt agt ggt ggt agc aca tac tac gca		240
Glu Trp Val Ser Ala Ile Ser Gly Ser Gly Ser Thr Tyr Tyr Ala		
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gac tcc gtg aag ggc cgg ttc acc atc tcc aga gac aaa tcc aag aac		288
Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Lys Ser Lys Asn		
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acg ttg tat ctg caa atg aac agc ctg aga gcc gag gac acg gcc gta			336
Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val			
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Tyr Tyr Cys Ala Lys Gly Gly Asn Asp Ile Leu Thr Gly Tyr Tyr Ala			
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tgg ggc cag gga acc ctg gtc acc gtc tcc tca ggg agt gca tcc gcc			432
Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly Ser Ala Ser Ala			
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Arg Gly Phe Pro Ser Val Leu Arg Gly Gly Lys Tyr Ala Ala Thr Ser			
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Pro Leu Pro Val Ile Ala Glu Leu Pro Pro Lys Val Ser Val Phe Val			
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Asp Trp Asn Ser Gly Glu Arg Phe Thr Cys Thr Val Thr His Thr Asp
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 465 470 475 480

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gtg tct ctg ggc gag agg gcc acc atc aac tgc aag tcc agc cag agt	144
Val Ser Leu Gly Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser	
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Val Leu Tyr Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln	
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aaa cca gga cag cct aag ctg ctc att tac tgg gca tct acc cgg	240
Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg	
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gaa tcc ggg gtc cct gac cga ttc agt ggc agc ggg tct ggg aca gat	288
Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp	
85 90 95	

ttc act ctc acc atc agc agc ctg cag gct gaa gat gtg gca gtt tat	336
Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr	
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tac tgt cag caa tat tat agt act cct ccg acg ttc ggc caa ggg acc	384
Tyr Cys Gln Gln Tyr Tyr Ser Thr Pro Pro Thr Phe Gly Gln Gly Thr	

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165	170	175	
gat aac gcc ctc caa tcg ggt aac tcc cag gag agt gtc aca gag cag Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln			576
180	185	190	
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195	200	205	
aaa gca gac tac gag aaa cac aaa gtc tac gcc tgc gaa gtc acc cat Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His			672
210	215	220	
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Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys			
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Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val			
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Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln			
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Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser			
195	200	205	
Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His			
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gct gtt cat gtg aaa gcc caa gaa gat gaa agg att gtt ctt gtt gac		96
Ala Val His Val Lys Ala Gln Glu Asp Glu Arg Ile Val Leu Val Asp		
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aac aaa tgt aag tgt gcc cggtt att act tcc agg atc atc cgt tct tcc		144
Asn Lys Cys Lys Cys Ala Arg Ile Thr Ser Arg Ile Ile Arg Ser Ser		
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gaa gat cct aat gag gac att gtg gag aga aac atc cga att att gtt		192
Glu Asp Pro Asn Glu Asp Ile Val Glu Arg Asn Ile Arg Ile Ile Val		
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cct ctg aac aac agg gag aat atc tct gat ccc acc tca cca ttg aga		240
Pro Leu Asn Asn Arg Glu Asn Ile Ser Asp Pro Thr Ser Pro Leu Arg		
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Thr Arg Phe Val Tyr His Leu Ser Asp Leu Cys Lys Lys Cys Asp Pro			
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aca gaa gtg gag ctg gat aat cag ata gtt act gct acc cag agc aat		336	
Thr Glu Val Glu Leu Asp Asn Gln Ile Val Thr Ala Thr Gln Ser Asn			
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atc tgt gat gaa gac agt gct aca gag acc tgc tac act tat gac aga		384	
Ile Cys Asp Glu Asp Ser Ala Thr Glu Thr Cys Tyr Thr Tyr Asp Arg			
115	120	125	
aac aag tgc tac aca gct gtg gtc cca ctc gta tat ggt ggt gag acc		432	
Asn Lys Cys Tyr Thr Ala Val Val Pro Leu Val Tyr Gly Gly Glu Thr			
130	135	140	
aaa atg gtg gaa aca gcc tta acc cca gat gcc tgc tat cct gac taa		480	
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Pro Leu Asn Asn Arg Glu Asn Ile Ser Asp Pro Thr Ser Pro Leu Arg			
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Thr Arg Phe Val Tyr His Leu Ser Asp Leu Cys Lys Lys Cys Asp Pro			
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Ile Cys Asp Glu Asp Ser Ala Thr Glu Thr Cys Tyr Thr Tyr Asp Arg			
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Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
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agc agc tat gcc atg agc tgg gtc cgc cag gct cca ggg aag ggg ctg 192
Ser Ser Tyr Ala Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
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Glu Trp Val Ser Ala Ile Ser Gly Ser Gly Tyr Thr Thr Tyr Tyr Ala
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gac tcc gtg aag ggc cgg ttc acc atc tcc aga gac aat tcc aag aac 288
Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn
85 90 95

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Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val
100 105 110

tat tac tgt gcc aaa aaa ccg ggg gac tat ggt tcg ggg agt tat tac 384

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Leu	Asp	Tyr	Trp	Gly	Gln	Gly	Thr	Leu	Val	Thr	Val	Ser	Ser	Gly	Ser	
130							135					140				
gca	tcc	gcc	cca	acc	ctt	ttc	ccc	ctc	gtc	tcc	tgt	gag	aat	tcc	ccg	480
Ala	Ser	Ala	Pro	Thr	Leu	Phe	Pro	Leu	Val	Ser	Cys	Glu	Asn	Ser	Pro	
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Ser	Asp	Thr	Ser	Ser	Val	Ala	Val	Gly	Cys	Leu	Ala	Gln	Asp	Phe	Leu	
165							170					175				
ccc	gac	tcc	atc	act	ttc	tcc	tgg	aaa	tac	aag	aac	aac	tct	gac	atc	576
Pro	Asp	Ser	Ile	Thr	Phe	Ser	Trp	Lys	Tyr	Lys	Asn	Asn	Ser	Asp	Ile	
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agc	agc	acc	cgg	ggc	ttc	cca	tca	gtc	ctg	aga	ggg	ggc	aag	tac	gca	624
Ser	Ser	Thr	Arg	Gly	Phe	Pro	Ser	Val	Leu	Arg	Gly	Gly	Lys	Tyr	Ala	
195							200				205					
gcc	acc	tca	cag	gtg	ctg	ctg	cct	tcc	aag	gac	gtc	atg	cag	ggc	aca	672
Ala	Thr	Ser	Gln	Val	Leu	Leu	Pro	Ser	Lys	Asp	Val	Met	Gln	Gly	Thr	
210							215				220					
gac	gaa	cac	gtg	gtg	tgc	aaa	gtc	cag	cac	ccc	aac	ggc	aac	aaa	gaa	720
Asp	Glu	His	Val	Val	Cys	Lys	Val	Gln	His	Pro	Asn	Gly	Asn	Lys	Glu	
225							230				235		240			
aag	aac	gtg	cct	ttt	cca	gtg	att	gtc	gag	ctg	cct	ccc	aaa	gtg	agc	768
Lys	Asn	Val	Pro	Leu	Pro	Val	Ile	Ala	Glu	Leu	Pro	Pro	Lys	Val	Ser	
245							250					255				
gtc	tcc	gtc	cca	ccc	cgc	gac	ggc	ttc	ttc	ggc	aac	ccc	cgc	aag	tcc	816
Val	Phe	Val	Pro	Pro	Arg	Asp	Gly	Phe	Phe	Gly	Asn	Pro	Arg	Lys	Ser	
260							265				270					
aag	ctc	atc	tgc	cag	gcc	acg	ggt	ttc	agt	ccc	cgg	cag	att	cag	gtg	864
Lys	Leu	Ile	Cys	Gln	Ala	Thr	Gly	Phe	Ser	Pro	Arg	Gln	Ile	Gln	Val	
275							280				285					
tcc	tgg	ctg	cgc	gag	ggg	aag	cag	gtg	ggg	tct	ggc	gtc	acc	acg	gac	912
Ser	Trp	Leu	Arg	Glu	Gly	Lys	Gln	Val	Gly	Ser	Gly	Val	Thr	Thr	Asp	
290							295				300					
cag	gtg	cag	gct	gag	gcc	aaa	gag	tct	ggg	ccc	acg	acc	tac	aag	gtg	960
Gln	Val	Gln	Ala	Glu	Ala	Lys	Glu	Ser	Gly	Pro	Thr	Thr	Tyr	Lys	Val	
305							310				315		320			
acc	agc	aca	ctg	acc	atc	aaa	gag	agc	gac	tgg	ctc	agc	cag	agc	atg	1008
Thr	Ser	Thr	Leu	Thr	Ile	Lys	Glu	Ser	Asp	Trp	Leu	Ser	Gln	Ser	Met	
325							330					335				
ttc	acc	tgc	cgc	gtg	gat	cac	agg	ggc	ctg	acc	ttc	cag	cag	aat	gcg	1056
Phe	Thr	Cys	Arg	Val	Asp	His	Arg	Gly	Leu	Thr	Phe	Gln	Gln	Asn	Ala	

340	345	350	
tcc tcc atg tgt gtc ccc gat caa gac aca gcc atc cg ^g gtc ttc gcc Ser Ser Met Cys Val Pro Asp Gln Asp Thr Ala Ile Arg Val Phe Ala			1104
355	360	365	
atc ccc cca tcc ttt gcc agc atc ttc ctc acc aag tcc acc aag ttg Ile Pro Pro Ser Phe Ala Ser Ile Phe Leu Thr Lys Ser Thr Lys Leu			1152
370	375	380	
acc tgc ctg gtc aca gac ctg acc acc tat gac agc gtg acc atc tcc Thr Cys Leu Val Thr Asp Leu Thr Tyr Asp Ser Val Thr Ile Ser			1200
385	390	395	400
tgg acc cgc cag aat ggc gaa gct gtg aaa acc cac acc aac atc tcc Trp Thr Arg Gln Asn Gly Glu Ala Val Lys Thr His Thr Asn Ile Ser			1248
405	410	415	
gag agc cac ccc aat gcc act ttc agc gcc gtg ggt gag gcc agc atc Glu Ser His Pro Asn Ala Thr Phe Ser Ala Val Gly Glu Ala Ser Ile			1296
420	425	430	
tgc gag gat gac tgg aat tcc ggg gag agg ttc acg tgc acc gtg acc Cys Glu Asp Asp Trp Asn Ser Gly Glu Arg Phe Thr Cys Thr Val Thr			1344
435	440	445	
cac aca gac ctg ccc tcg cca ctg aag cag acc atc tcc cg ^g ccc aag His Thr Asp Leu Pro Ser Pro Leu Lys Gln Thr Ile Ser Arg Pro Lys			1392
450	455	460	
ggg gtg gcc ctg cac agg ccc gat gtc tac ttg ctg cca cca gcc cg ^g Gly Val Ala Leu His Arg Pro Asp Val Tyr Leu Leu Pro Pro Ala Arg			1440
465	470	475	480
gag cag ctg aac ctg cgg gag tcg gcc acc atc acg tgc ctg gtg acg Glu Gln Leu Asn Leu Arg Glu Ser Ala Thr Ile Thr Cys Leu Val Thr			1488
485	490	495	
ggc ttc tct ccc gcg gac gtc ttc gtg cag tgg atg cag agg ggg cag Gly Phe Ser Pro Ala Asp Val Phe Val Gln Trp Met Gln Arg Gly Gln			1536
500	505	510	
ccc ttg tcc ccg gag aag tat gtg acc agc gcc cca atg cct gag ccc Pro Leu Ser Pro Glu Lys Tyr Val Thr Ser Ala Pro Met Pro Glu Pro			1584
515	520	525	
cag gcc cca ggc cg ^g tac ttc gcc cac agc atc ctg acc gtg tcc gaa Gln Ala Pro Gly Arg Tyr Phe Ala His Ser Ile Leu Thr Val Ser Glu			1632
530	535	540	
gag gaa tgg aac acg ggg gag acc tac acc tgc gtg gtg gcc cat gag Glu Glu Trp Asn Thr Gly Glu Thr Tyr Thr Cys Val Val Ala His Glu			1680
545	550	555	560
gcc ctg ccc aac agg gtc acc gag agg acc gtg gac aag tcc acc ggt Ala Leu Pro Asn Arg Val Thr Glu Arg Thr Val Asp Lys Ser Thr Gly			1728
565	570	575	

aaa ccc acc ctg tac aac gtg tcc ctg gtc atg tcc gac aca gct ggc		1776	
Lys Pro Thr Leu Tyr Asn Val Ser Leu Val Met Ser Asp Thr Ala Gly			
580	585	590	
acc tgc tac tga		1788	
Thr Cys Tyr			
595			
<210> 20			
<211> 595			
<212> PRT			
<213> Homo sapiens			
<400> 20			
Met Glu Phe Gly Leu Ser Trp Leu Phe Leu Val Ala Ile Leu Lys Gly			
1	5	10	15
Val Gln Cys Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Leu Val Gln			
20	25	30	
Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe			
35	40	45	
Ser Ser Tyr Ala Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu			
50	55	60	
Glu Trp Val Ser Ala Ile Ser Gly Ser Gly Tyr Thr Thr Tyr Tyr Ala			
65	70	75	80
Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn			
85	90	95	
Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val			
100	105	110	
Tyr Tyr Cys Ala Lys Lys Pro Gly Asp Tyr Gly Ser Gly Ser Tyr Tyr			
115	120	125	
Leu Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly Ser			
130	135	140	
Ala Ser Ala Pro Thr Leu Phe Pro Leu Val Ser Cys Glu Asn Ser Pro			
145	150	155	160
Ser Asp Thr Ser Ser Val Ala Val Gly Cys Leu Ala Gln Asp Phe Leu			
165	170	175	
Pro Asp Ser Ile Thr Phe Ser Trp Lys Tyr Lys Asn Asn Ser Asp Ile			
180	185	190	
Ser Ser Thr Arg Gly Phe Pro Ser Val Leu Arg Gly Gly Lys Tyr Ala			
195	200	205	
Ala Thr Ser Gln Val Leu Leu Pro Ser Lys Asp Val Met Gln Gly Thr			
210	215	220	

Asp Glu His Val Val Cys Lys Val Gln His Pro Asn Gly Asn Lys Glu
 225 230 235 240

 Lys Asn Val Pro Leu Pro Val Ile Ala Glu Leu Pro Pro Lys Val Ser
 245 250 255

 Val Phe Val Pro Pro Arg Asp Gly Phe Phe Gly Asn Pro Arg Lys Ser
 260 265 270

 Lys Leu Ile Cys Gln Ala Thr Gly Phe Ser Pro Arg Gln Ile Gln Val
 275 280 285

 Ser Trp Leu Arg Glu Gly Lys Gln Val Gly Ser Gly Val Thr Thr Asp
 290 295 300

 Gln Val Gln Ala Glu Ala Lys Glu Ser Gly Pro Thr Thr Tyr Lys Val
 305 310 315 320

 Thr Ser Thr Leu Thr Ile Lys Glu Ser Asp Trp Leu Ser Gln Ser Met
 325 330 335

 Phe Thr Cys Arg Val Asp His Arg Gly Leu Thr Phe Gln Gln Asn Ala
 340 345 350

 Ser Ser Met Cys Val Pro Asp Gln Asp Thr Ala Ile Arg Val Phe Ala
 355 360 365

 Ile Pro Pro Ser Phe Ala Ser Ile Phe Leu Thr Lys Ser Thr Lys Leu
 370 375 380

 Thr Cys Leu Val Thr Asp Leu Thr Thr Tyr Asp Ser Val Thr Ile Ser
 385 390 395 400

 Trp Thr Arg Gln Asn Gly Glu Ala Val Lys Thr His Thr Asn Ile Ser
 405 410 415

 Glu Ser His Pro Asn Ala Thr Phe Ser Ala Val Gly Glu Ala Ser Ile
 420 425 430

 Cys Glu Asp Asp Trp Asn Ser Gly Glu Arg Phe Thr Cys Thr Val Thr
 435 440 445

 His Thr Asp Leu Pro Ser Pro Leu Lys Gln Thr Ile Ser Arg Pro Lys
 450 455 460

 Gly Val Ala Leu His Arg Pro Asp Val Tyr Leu Leu Pro Pro Ala Arg
 465 470 475 480

 Glu Gln Leu Asn Leu Arg Glu Ser Ala Thr Ile Thr Cys Leu Val Thr
 485 490 495

 Gly Phe Ser Pro Ala Asp Val Phe Val Gln Trp Met Gln Arg Gly Gln
 500 505 510

 Pro Leu Ser Pro Glu Lys Tyr Val Thr Ser Ala Pro Met Pro Glu Pro
 515 520 525

Gln Ala Pro Gly Arg Tyr Phe Ala His Ser Ile Leu Thr Val Ser Glu
530 535 540

Glu	Glu	Trp	Asn	Thr	Gly	Glu	Thr	Tyr	Thr	Cys	Val	Val	Ala	His	Glu
545					550					555					560

Ala Leu Pro Asn Arg Val Thr Glu Arg Thr Val Asp Lys Ser Thr Gly
565 570 575

Lys Pro Thr Leu Tyr Asn Val Ser Leu Val Met Ser Asp Thr Ala Gly
580 585 590

Thr Cys Tyr
595

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<210> 21  
<211> 726  
<212> DNA  
<213> Homo sapiens
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<220>
<221> CDS
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<400> 21
atg gtg ttg cag acc cag gtc ttc att tct ctg ttg ctc tgg atc tct      48
Met Val Leu Gln Thr Gln Val Phe Ile Ser Leu Leu Leu Trp Ile Ser
1          5                  10                   15

```

```

ggt gcc tac ggg gac atc gtg atg acc cag tct cca gac tcc ctg gct      96
Gly Ala Tyr Gly Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala
          20           25           30

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gtg tct ctg ggc gag agg gcc acc atc aac tgc aag tcc agc cag agt	144	
Val Ser Leu Gly Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser		
35	40	45

```

gtt tta tac agc tcc aac aat aag aac tac tta gct tgg tac cag cag      192
Val Leu Tyr Ser Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln
      50          55          60

```

```

aaa cca gga cag cct cct aag ttg ctc att tac tgg gca tct acc cg
Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
65          70          75          80

```

```

gaa tcc ggg gtc cct gac cga ttc agt ggc agc ggg tct ggg aca gat 288
Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
          85           90           95

```

```

ttc act ctc acc atc agc agc ctg cag gct gaa gat gtg gca gtt tat      336
Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr
          100       105       110

```

tac tgt cag caa tat tat act act ctt ccg ctc act ttc ggc gga ggg 384
 Tyr Cys Gln Gln Tyr Tyr Thr Thr Leu Pro Leu Thr Phe Gly Gly Gly
 115 120 125

acc aag gtg gag atc aaa cga act gtg gct gca cca tct gtc ttc atc		432
Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile		
130 135 140		
ttc ccg cca tct gat gag cag ttg aaa tct gga act gcc tct gtt gtg		480
Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val		
145 150 155 160		
tgc ctg ctg aat aac ttc tat ccc aga gag gcc aaa gta cag tgg aag		528
Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys		
165 170 175		
gtg gat aac gcc ctccaa tcg ggt aac tcc cag gag agt gtc aca gag		576
Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu		
180 185 190		
cag gac agc aag gac agc acc tac agc ctc agc agc acc ctg acg ctg		624
Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu		
195 200 205		
agc aaa gca gac tac gag aaa cac aaa gtc tac gcc tgc gaa gtc acc		672
Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr		
210 215 220		
cat cag ggc ctg agc tcg ccc gtc aca aag agc ttc aac agg gga gag		720
His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu		
225 230 235 240		
tgt tag		726
Cys		

<210> 22		
<211> 241		
<212> PRT		
<213> Homo sapiens		
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Met Val Leu Gln Thr Gln Val Phe Ile Ser Leu Leu Leu Trp Ile Ser		
1 5 10 15		
Gly Ala Tyr Gly Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala		
20 25 30		
Val Ser Leu Gly Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser		
35 40 45		
Val Leu Tyr Ser Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln		
50 55 60		
Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg		
65 70 75 80		
Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp		
85 90 95		

Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr
 100 105 110

Tyr Cys Gln Gln Tyr Tyr Thr Thr Leu Pro Leu Thr Phe Gly Gly Gly
 115 120 125

Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile
 130 135 140

Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val
 145 150 155 160

Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys
 165 170 175

Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu
 180 185 190

Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu
 195 200 205

Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr
 210 215 220

His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu
 225 230 235 240

Cys

<210> 23
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 <212> DNA
 <213> Artificial

<220>
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24

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 <212> DNA
 <213> Artificial

<220>
 <223> an artificially synthesized primer sequence

<400> 24
 agcataatta aagccaagga ggag

24

<210> 25
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 <212> DNA
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<220>
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aattaagg 68

<210> 26
<211> 76
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<213> Artificial

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ttcatgatca ggccgg 76

<210> 27
<211> 23
<212> DNA
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<223> an artificially synthesized primer sequence

<400> 27
gaggaattcc accatgaaga acc 23

<210> 28
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<212> DNA
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<220>
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<400> 28
gaggcggccg cttagtcagg atagcag 27

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<212> DNA
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<210> 30
<211> 36
<212> DNA

<213> Artificial
<220>
<223> an artificially synthesized primer sequence

<400> 30
aaaactcgag aagcttagac atgataagat acattg 36

<210> 31
<211> 12
<212> DNA
<213> Artificial

<220>
<223> an artificially synthesized linker sequence

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